Library Space Planning Guide

(Revised for 2014 – for use with the companion worksheet)

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Introduction

This guide is intended to initiate a library facilities planning process. By using this guide, librarians and trustees can obtain a general estimate of their library's space needs. With that estimate, planners can assess the adequacy of the existing overall square feet and they can determine whether a more detailed study would be appropriate.

This guide does not presume to offer a precise estimate of space needs. There are many detailed factors affecting space needs and service projections that are not addressed in this guide. Only broad types of library space are defined here:

- collection space
- public electronic workstation space
- user seating space
- staff work area space
- meeting and conference room space
- special-use space
- flexible-use space
- non-assignable/mechanical space

Calculation of the needs in these broad types of space quantifies the largest share by far of the overall projected space needs. But just estimating overall space requirements is not enough. Libraries must design space to be used as efficiently and effectively as possible. Library building projects must include flexible-use spaces that readily accommodate changes in media, technology, demographics, and community needs, without recurring major reinvestments in building renovation.

Library planners must also acknowledge that availability of space (or lack of it) is not the sole reason for examining physical facilities. Energy efficiency and condition of the heating, ventilating and air conditioning systems, adaptability to meet the electrical and telecommunications requirements of tomorrow's library technologies, assessment of the general effectiveness of work flow, accessibility to people with disabilities, and compliance with federal, state and local fire, safety, and building codes are all suitable reasons to examine the structure that houses your local library.

Strategic Planning

Every library contemplating a construction project should have a complete and current strategic plan. Plans should help communities plan for library facility needs for the next 10 to 20 years. While the actual long-term impact of evolving technology cannot be predicted, its importance in the library will continue to grow, and plans should provide for that growth.

See the State Library's Strategic Planning (http://www.ctstatelibrary.org/node/10403) for more information.

Community Needs Assessment and Community Involvement

Before evaluating current space and developing plans for new space, however, the library must undertake an assessment of community needs in order to understand the full range of services currently offered by all agencies within the community and plan for the creation of spaces that best address unmet or inadequately-met community needs. Well conducted community analyses and strategic plans provide information for these types of assessments. Libraries should try to determine not just what the needs of individuals in the community are looking for in a library, but also what the library can do to work with the community and collaborate with community groups in the area.

When renovating or building a library it is important to involve the public, community organizations, educators, and others, and not just let a building committee make all the decisions. The public can be involved through various means, including surveys, focus groups, or interviews. A focus group is a form of qualitative research where groups of people are asked about their opinions, beliefs, perceptions, and ideas in a public forum that encourages people to participate. Surveys can be constructed to reach more of the town's demographic population and can be used to support the findings of focus groups. Focus group sessions and surveys need to be pilot tested to make sure questions are geared to help with the project. There are many organizations in Connecticut that are qualified to help with focus groups and surveys.

Building Codes

The Connecticut State Building Code applies to all new buildings and alterations and additions to existing buildings. All new construction areas must comply, but existing non-altered areas may remain non-conforming as long as total height and area requirements are not exceeded, safety is not reduced, and handicapped accessibility is provided. The Fire Safety Code applies to all areas of existing and new buildings. See the Connecticut Department of Construction Services (http://www.ct.gov/dcs/cwp/view.asp?a=4447&q=521446&dcsNav) for more information.

Americans with Disabilities Act (A.D.A.)

The Americans with Disabilities Act of 1990 (ADA) will also affect library space and design. This law gives citizens with disabilities the right to participate fully in public library services, and may require alterations to ensure accessible services. The emphasis under the ADA is on accessible services rather than fully accessible buildings. Please keep in mind that you will need an accessible route, a continuous unobstructed path connecting all accessible elements and spaces of a building. Interior accessible routes may include corridors, floors, ramps, elevators, lifts, and clear floor space next to furniture.

Buildings officially designated as historically significant are not exempt from the ADA, but libraries do not have to damage the historic integrity of the structure to make them accessible; every effort should be made to provide at least a minimal degree of access in a historic structure.

For more resources on ADA visit the State Library's ADA Assistance (http://www.ctstatelibrary.org/node/10268).

Space Considerations

The main space planning section of this Guide treats library space needs in a generic fashion, without reference to a specific age group or a specific type of collection. Therefore it is important to discuss how some spaces in the library require special space planning given their use by a unique audience or their purpose as a storage place for special materials. For actual collection space or other space requirements, see the Library Space Planning Steps section below.

Children's Space

The physical environment affects what and how much children learn. Space should be arranged in ways that help focus and sustain children's learning. The design of the children's room should:

- foster exploration, discovery and learning
- encourage parents and caregivers to interact with their children
- create spaces for interactive play
- provide children with easy access to material, interactive displays and learning activities
- allow for groups of children to work on collaborative activities
- support educational technology with adequate infrastructure

The space assigned for children's library services may vary. The actual square feet will be affected by the library's defined service responses in the strategic plan. This area should be flexible to allow for expansion, reduction, or re-configuration. Adequate storage is essential for children's programming and seasonal activities, early literacy materials, and displays. There should be workspace for library staff planning children's programs and services.

Good visibility in the children's area is especially important.

Teen/Young Adult Space

For more information on planning Teen spaces see the Young Adult Library Services Association (YALSA) Teen Space Guidelines (TSG)(http://www.ala.org/yalsa/guidelines/teenspaces).

The space assigned for teen/young adult library services may vary. The actual square feet will be affected by the library's defined service responses in the strategic plan, but should strongly consider the percentage of the community that is composed of teens now and in the future (TSG: 3.2). When designing this space, you should have the input of teens. This space should be planned, not just an afterthought.

The location should be visible and welcoming with signage, graphics, art work, and preferably not near the children's area. The teen area should be distinct and stand out as dedicated teen space. By emphasizing that this is the teen space, the art work, graphics, and furniture will be different from the rest of the library. Teens are social, which can mean noisy, (TSG: 3.4) and this should be considered in the planning. Quiet space they can use for individual or joint projects should be available as well (TSG: 3.6). Today's teens are digital natives which heightens the importance of planning for adequate and changing technology in the teen space.

It is important to have a staff member in this area when teens are there and there should be workspace for library staff planning teen programs and services (TSG: 3.9). Good visibility of the teen area is important, so if there is not a staff member in the teen area, the space should be highly visible from areas that are staffed.

Local History room

This is not for a true archival environment, but these are best practices for a local history room:

- Store materials in a locked room or closet with no windows or shades always pulled to block natural light or (last choice) use ultraviolet filters on the windows.
- No lights unless room is occupied, and use ultraviolet filters on fluorescent lights.
- Space where patrons using the materials can be observed (security against theft).
- Adequate shelving and storage for the materials to be stored: map cases, atlas shelves, shelves deep enough for archival boxes.
- Do not use wooden shelving for archival material.
- For books and paper:
  - Temperature at 70 degrees or lower, relative humidity between 30% and 50%
  - For audio tapes, CDs, photographs see IPI Media Storage quick reference, 2nd ed.

Design Considerations

There are many design elements libraries will need to consider when planning new library space, including site selection, entrances, pathways, lighting, furniture, interior design, security, display areas, and signage. Designing new space in or near historic buildings has its own set of issues, as does any project that involves the library being part of projects with other government buildings and/or services. Though most of the design elements mentioned above have been traditional ones in planning new libraries, there are some less traditional elements to consider in the 21st century library.

Flexible-Use Design

The primary goal of effective library space planning is that the facility must respond to the needs of its service population. Once the needs of its service population have been determined, library space must include flexibility in the design of interior and exterior spaces in order for the library to effectively address the immediate and future needs of its service population. Nearly every space you plan for in a new or expanded library should be capable of conversion to meet other new or expanding library service needs. For instance, libraries may wish to make use of meeting room space when it is not in use. By incorporating flexibility in its design, a meeting room may become a place for quiet study and additional comfortable seating.

Book Shelves and the Modern Library

The traditional view of the library as a warehouse of books has long since been replaced with the library as a community resource where a good collection of library materials is just one of many of its resources. In particular, modern library design seeks to provide more open space for a variety of library activities. As a general rule, a public library building should not be designed to house more than about

five books per square feet for the building as a whole.[*] Any more than this and the library will be mostly book stacks, with no space for library activities. Besides creating spaces for other library activities, a more open library is much easier for people to navigate.

Green Design

Leadership in Energy and Environmental Design (LEED®)

Green design not only makes a positive impact on public health and the environment, it also reduces operating costs, enhances building and organizational marketability, potentially increases occupant productivity, and helps create a sustainable community. LEED provides rating systems that are voluntary, consensus-based, and market-driven, based on accepted energy and environmental principles, and that strike a balance between established practices and emerging concepts. For more information, see the LEED web-site (http://www.usgbc.org/leed).

While silver LEED certification is required for all construction projects over $10 million that receive funding through the Connecticut State Library's construction grant program, it is recommended that all projects incorporate as much green design as possible.

Technology

Flexibility is the key in designing technology in the modern library. Rather than establish library spaces with specific technology, it is better to equip all areas of the library with good technology infrastructure. See "Step 3: Public Electronic Workstation Space and Information on Automation Needs" for information on how to plan for this infrastructure.

Quiet vs. Noisy

As collaborative work, meetings, and other group activities become more common in libraries, library design must accommodate increased noise and commotion without abandoning the continuing need for quiet spaces. Some new libraries are incorporating specific glassed-in quiet areas, for example. Other libraries are creating zones of co-working and technology-rich areas of the library and keeping them separate from the quiet, low-technology areas.

Natural Light

Among the many attractions of the modern library building is the efficient and pleasing effects of natural light. Surveys show that this is one of the more important features that library users remember when asked why they enjoy their local libraries.

Emergency Preparedness

A new construction or renovation project is the perfect opportunity for a library to conduct a risk assessment to identify potential emergency scenarios and building design flaws. An understanding of these emergency scenarios will enable a library to determine specific design elements as well as additional resource requirements. These requirements may include but are not limited to emergency generators, enhanced security measures such as surveillance cameras, and additional staff so that plans and procedures may be developed to prepare the library. The library should work closely with town government and public safety to ensure that the library has the necessary resources to protect staff,

[*] WebJunction Webinar "Flexible Spaces – Flexible Futures" Wednesday, January 15, 2014.

patrons, visitors, contractors and anyone else using the library facilities. An Emergency/Evacuation Plan should be developed in conjunction with a building plan to ensure that the library is prepared for potential natural or man-made emergencies. Library design should recognize that the "library as refuge" is an important role the library can play in the community, and the library should be equipped to handle this role when emergencies happen.

Outdoor Space

Outdoor spaces are an extension of the physical building space of the library and should be considered in the design plan. New and existing outdoor spaces can engage the community in new ways and create a welcoming environment. See Step 7 below for more information on using outdoor space.

Library Space Planning Steps

*The companion **Library Space Planning Worksheet** (Excel file) is designed to be used in conjunction with the steps below. The worksheet will assist the library in calculating the library's projected overall space need.*

Step 1: Service Population

Effective library facilities' planning begins with a projection of the service population 10 to 20 years from now. Since library buildings are an important capital investment for most communities, it is crucial that they be planned to respond to current *and future* needs. Projected service population will affect your predictions on the space required for providing library services.

Estimates of the projected population can typically be obtained from your municipality, the regional planning commission, or the Connecticut State Data Center (http://ctsdc.uconn.edu/) at the University of Connecticut. Local school districts may also be a valuable source for these projections. Be aware, however, that school district service areas may not coincide with public library service areas.

Most public libraries also serve residents from beyond the boundaries of the municipality in which they are located. To ignore the service implications or traffic generated by these individuals would result in a facility that would be outgrown too quickly. Connecticut has always been a leader in allowing non-residents to use public libraries for free. The State Library, through the Connecticard program, reimburses libraries for the added expense of serving non-residents. And the residents of the town can also use other public libraries for free. These are good arguments for explaining why local libraries should plan for use by non-residents.

One method of determining the nonresident service population is to calculate the ratio of nonresident transactions by a sample count and apply that ratio to the base population.

See the Library Space Planning Worksheet for a formula for projecting nonresident population to be served.

Step 2: Collection Space

Projecting Collection Space

Projecting the need for collection space must take into account the size of your library's existing collection, your collection development policy (including a policy on regular weeding), the size of the projected service population, and your commitment to physical versus electronic collection materials.

Electronic versus Physical Collections

Before determining the space needs of a library's physical collections, libraries must determine how much of their future library materials budget will be devoted to library materials in electronic, downloadable form. This discussion should play an ongoing part in developing the library's current collection development policy.

It seems clear that the future public library collection will include both physical library materials and electronic materials downloaded to electronic devices. Libraries must decide what will be the likely mix of materials in future years and plan their space needs accordingly. Though space needs for electronic materials seem negligible, keep in mind that providing access to these materials may require some space needs in the display (touch-screen catalogs) and the in-library selection and use of the material.

Physical Collections

Projecting a future overall collection size and then dividing that collection between physical library materials and electronic library materials is no longer a workable model. E-books and other electronic materials do not always provide a one to one replacement for physical library materials. E-books, for example, may be shared among many libraries, used simultaneously by many users, limited by a set quantity of borrows, and accessed in a vendor's catalog and not made a part of the collection until a user requests it (user-generated acquisitions). Counting these e-book collections in a traditional way is quite problematic. Therefore physical book collections and the space they need should be evaluated on its own.

Book Collections

Before determining the size of a future book collection, libraries would do well to evaluate their collections and determine whether regular weeding has taken place in accordance with the current collection development policy. Using a statistical tool such as collection turnover (circulation divided by collection size) for specific collections can be particularly useful for identifying where weeding might be necessary.

The easiest way to calculate the projected size of a book collection is to calculate the net additions to the collection (volumes added minus volumes withdrawn equals net additions) for each of the next 10 to 20 years, and add these numbers to the size of the existing book collection.

Non-Print collection

Non-print materials (DVDs, Audio books in various formats, Music CDs, playaways, etc)

Downloadable services for music, audio books, and video may have even more of an impact on the future of physical non-print collections than e-books. Keep this in mind when projecting the size of your non-print collections. Historically you could expect your non-print collection to be about 10% of the size of your projected book collection. Your library will need to adjust this calculation depending on how aggressive you expect your library to be in offering download services. Alternatively, you can use the same type of "net additions to the collection" formula you used with books, but be sure you consider that the rate of non-print items withdrawn will accelerate as the years go by.

Periodicals
Formulas for estimating the optimum number of magazines for a specific service population are no longer valid. The decline of available print magazines and the rise of databases (including iCONN), downloadable publications, blogs, and internet news and entertainment sites make it unlikely that periodical collections in libraries will grow in the coming years.

Calculating Collection Space

The number of volumes that can be stored in a given space can vary from 5 to 25 volumes per square foot, depending on several factors: the height of the shelving, width of the aisles, and the type of material (reference vs. children's books). For compact book storage, use 25 volumes per square foot. For stack arrangements with aisles, a general average of 10 volumes per square foot permits maximum flexibility and minimizes the number of books placed on difficult-to-reach top and bottom shelves, while leaving adequate space on each shelf for years. These calculations are for the space used to house the stack arrangements only and do not include the other open areas you may wish to include nearby.

See the Library Space Planning Worksheet for formulas on determining collection space.

Step 3: Public Electronic Workstation Space and Technology Needs

Changing technology makes it difficult to plan this space; however, all public and staff areas of the library require the connection of computers and information appliances, both mobile and fixed, that use voice, data, and video communications services.

All desks, work/study carrels, and conference/meeting rooms should allow connections to the in-building network.

Technology affects the library's electrical and wiring needs. Buildings should be capable of supporting wired and wireless access to digital communications services that may originate from within the building or from external networks. External networks include the Internet, private and public wide area networks, the public telephone network and the cable network accessed through a variety of commercial service providers, including local exchange carriers and cable companies that may connect the library using copper wire, cable, wireless or fiber optics transmission media. New building projects need to have conduits located in floors, walls, and ceilings to provide for flexibility in the future. Be sure to install wired and wireless communications using the current optimal standards.

Libraries are advised to consult with the Connecticut Education Network (http://www.ct.gov/cen/site/default.asp) regarding ways to improve their networks and their broadband access to the Internet.

Public Access Computer (PAC) workstations should be physically placed throughout the library and are primarily designed for accessing library catalogs. PACs usually consist of a terminal, keyboard and printer access. For a stand-up workstation, allow for 20 square feet and for a sit-down workstation allow for 45 square feet. (Instead of dedicated PACs, libraries could use electronic workstations as described below.)

Electronic workstations must provide for computer equipment, user space for a book or writing, and peripherals. Besides access to the internet and library resources, workstations should provide office productivity applications and other software tools. An average space allocation is 45 square feet for individual user. For collaborative workstations 60 square feet is needed to allow for multiple computer users on one computer. If your library is providing workstations with laptops and tablets instead of desktop computers, then space allocation per workstation can be reduced.

Number of computers needed

Consider these factors in determining a suitable inventory of computer workstations:

- daily traffic through the building, presently and in the future. Some formulas suggest one terminal for every 20 visits while other recommendations suggest one terminal for every 10 visits (or even fewer)
- the kinds of environments that the library intends to create around its public computer stations (if the setting will foster extended periods of patron use, additional terminals will be needed)
- the degree to which wireless connectivity and hard-wired access ports will encourage patrons to bring their personal laptops to the library to use (which may reduce the number of machines provided by the library)
- the library's own direct observation of patron queues waiting for access to terminals presently on-site; and the experience of neighboring libraries regarding the number of terminals provided for the public.
- Reference staff accustomed to providing individual assistance to users to enhance digital literacy skills will need extra workstations in the reference area.

Microfilm or Microfiche Reader/Printer Workstation

For libraries still using this format (often those with history and genealogy materials), the space allocation is 35 square feet.

See the Library Space Planning Worksheet for formulas on determining workstation spaces.

Step 4: User Seating Space

It is recommended that libraries serving more than 10,000 residents provide 5 user seats for every 1,000 people in their projected service area. Libraries serving less than 10,000 residents should provide 7 to 10 seats for every 1,000 residents. Populations of 2,500 or less should have at least 20 seats.

This recommendation only establishes a base or starting point for further consideration. User seating does not include the seats in conference rooms, meeting rooms, and staff work areas, unless the rooms will be used for everyday library activities, such as quiet study or homework center. If a meeting room is available for everyday library activities, excluding meetings, a minimum of fifty percent of the hours that the library is open, ten percent of the meeting room seats could be used to meet the total seating requirement. Be sure to document on the worksheet how the room will be used and staffed.

In planning for future flexibility, provide wiring that would permit converting all seating to electronic workstations, wireless for laptops and electrical outlets for charging electronic devices.

Providing comfortable seating will be a priority as libraries see an increase in the use of laptops and other mobile devices.

Just as the specific space required to house the collection depends on the type of shelving used and the type of material stored there, so the exact amount of space needed for user seating will vary depending on the type of seating: for seating at tables, allow 25 square feet per seat; for seating at study carrels, allow 30 square feet; for seating in lounge chairs, allow 40 square feet, etc.

See the Library Space Planning Worksheet for formulas on determining user seating spaces.

Step 5: Service Areas & Staff Work Area Space

A new or expanded facility offers the opportunity to reorganize relationships among existing work areas and add new work areas to improve service to the community.

All staff work areas will provide for computer equipment and peripherals, plus access to the Internet, and other online resources. Data transmission considerations should be part of the planning of this area.

To determine the appropriate number of service points and the appropriate staffing levels at each service point, evaluate present staff workloads and examine trends in service patterns (increasing reference use or young adult use, for instance). Examine each existing *and prospective* department or service area (circulation; technical services including acquisition, cataloging and processing; reference; children's; etc.); determine whether a service point is appropriate given present or anticipated workloads; if so, identify how many staff members are needed to meet the projected service need. If your library is planning combined service areas (e.g. reference and circulation) or roaming reference, or even roaming circulation desks, this will affect the number of service points and their expected space needs. Also, if your library is planning self-checkout service areas, these will require their own space and may reduce the number of staff service areas.

Office space should also be included in this section. The library director and other administrative and department heads should have offices.

Staff should also have a lounge, a place where the staff can get away from the public and eat their meals (include the square feet needs in special-use space).

If your library is using RFID technology, this may affect your space requirements such as a need for an automatic sorting area or decrease in the need for staff service areas when self-checkout is used.

Note that this section refers to the number of staff *work areas,* not the number of individual employees or the number of full-time equivalents (FTEs) on the library payroll. Obviously, several individuals can occupy a single work station at different times. Conversely, it may be desirable to provide two or more work areas for certain employees (a children's librarian, for instance, may work a public service desk part of the time *and* have a separate desk or office away from that desk).

By identifying work areas, focus on the tasks to be performed in a given area and the ways that these tasks relate to other library operations. An average space allocation is 150 square feet per work area. In practice, some will be larger, and others may be slightly smaller.

See the Library Space Planning Worksheet for formulas on determining service and work area spaces.

Step 6: Meeting and Conference Room Space

As resource rich community centers, public libraries provide meeting rooms to accommodate library-sponsored programs and other community meetings. The number and size of meeting rooms should be determined by the library's service responses as defined in its strategic plan, anticipated programming activities, and by the availability of similar rooms elsewhere in the community for use by other local groups**.**

Besides providing spaces for traditional library programming, all libraries should consider providing collaborative workspace for both teens and adults, so that tutors working with students, literacy tutors, town committees, community groups, or neighborhood small businesses have a space available at the library that provides privacy and encourages learning and creating. Also, libraries providing digital, financial, and health literacy or other training may wish to have rooms designed to provide such training. These rooms require connections for computer equipment and peripherals, with access to the internet and other online resources. Interactive whiteboards are highly recommended.

Types of meeting room space

- Program seating.
- Conference room seating
- Small study rooms usually seating for two to four people
- Children’s programming for story hour and crafts. Some libraries with extensive programming activities for children may want to provide a separate area or room in the children's department to accommodate those activities. Otherwise, children's programs would likely be scheduled in a general meeting room and would prevent other community groups from using the meeting room during certain times.

- Computer training lab. A dedicated space for training the public and staff on computers. The best design would be that the lab could be used by the general public when not used for training.

Flexible space planning allows libraries to create meeting spaces that accommodate more than one kind of group activity.

Factors to consider

Some libraries may want an entrance from the outside to the meeting room so that the room may be used when the library is closed. This would involve being able to access the meeting room, restrooms, and kitchen after normal library hours. Before designing a meeting space in this way, however, libraries should consider some of the additional safety concerns this design creates. Also, a meeting room set away from the rest of the library may create a space that cannot be used for any other activities, such as additional study space or comfortable seating.

Larger program rooms may need overhead, large-screen projection with all necessary cable and data transmission lines, audio equipment, lectern, ADA equipment, special lighting (with available panel) for stage, audience , aisle, and art display lighting.

Smaller study rooms may need the technology for users to access and participate in webinars or other online interactive activities. Subscription services to webinar software could be made available for use in these rooms.

Libraries usually want a kitchen in or close to the general meeting room. Many groups want to serve coffee and food during a meeting.

Most libraries will want a children's program area attached to the children's area with storage for craft and story hour materials, audiovisual equipment, and temporary chair storage.

Libraries will need a lockable storage area connected to the general meeting room and children's program area for chairs, tables, equipment, and supplies.

See the Library Space Planning Worksheet for formulas on determining meeting room spaces.

Step 7: Special-Use Space

Special-use space provides space for elements of an individual library's program of service or special types of furnishings that have not been accounted for in earlier sections of this guide. Communities will vary widely on the need for special-use space, and all libraries should recognize that they are serving not just individuals but communities made up of a variety of groups. Creating maker-spaces and other creative work areas encourage not just individuals (especially teens) to learn and create, but they encourage groups to learn and create collaboratively.

The library may need spaces to support a variety of library services. Space required for these services should be determined on an individual library basis. The following list of representative furnishings and their representative space allocations in square feet could be used. This listing is by no means complete.

Item	*sq. ft.*
Dynamic digital signage	*10*
Bulletin board	*9*
Display case	*50*
Handouts (free-standing)	*20*
Map file	*35*
Microfilm cabinets	*10*
Newspaper rack	*25*
Paperback rack	*35*
Printer	*50*
Photocopier	*50*
Scanner	*40*
Staff locker	*4*
Staff lounge/break rm.	*25 per seat +50*

More special-use areas to consider:

- **Popular Materials Display Areas.** Areas for new print and non-print materials, as well as interactive "discovery stations" for browsing and downloading electronic materials.
- **Café.** Some libraries may wish to allow the consumption of beverages, and perhaps food, in a limited quantity, such as coffee service. These café areas may range from self-service vending areas to fully-staffed hot and cold food service establishments, either run by the library itself or an outside food vendor which leases space in the library. It is possible to minimize the equipment, appliances and utilities required for a café space under the Connecticut Public Health Code by limiting the serve ware (plates, cutlery, etc.) to disposable products, and stocking only fully prepared or non-perishable food items. Before designing your café space, consult your local building inspector and health department official for the required food preparation sinks, hand wash sinks, dishwashing sinks and grease separators which may be required. Location of a public bathroom adjacent to the café space is important. A waste management plan for a library with any food or beverage consumption allowed is also required.
- **Maker-space and digital media labs.** A maker-space is designed to facilitate learning and creativity and as such is a natural extension of what libraries do. Though traditionally libraries have had programs to teach literacy, writing, crafting, etc., the maker-space is also designed to learn and create using tools more commonly found in science, technology, engineering, manufacturing, and computer science classrooms. Maker-spaces and digital labs are places where the tools are provided to create and learn either as individuals or particularly in groups.
- **Creation studio** (audio, visual) for creating library-produced and user-produced programs for video and audio distribution over the web or elsewhere. Also for creating live webinars or other live performances.

- **Gallery.** A gallery space in a library will allow for display of local arts, crafts and other talents to be displayed to the public. The gallery can be flexible to include local historical artwork and information or seasonal displays. Placement of the gallery should be by the main entrance, circulation area, or near a main gathering space or intersection between main library spaces. Gallery space can range from free wall space for display of two dimensional items, to enclosed glass cases either wall mounted or on pedestals, for display of 2 and 3 dimensional items which can be locked for increased security. Gallery spaces should be well lit, either by wall washing light fixtures or fixtures within the display case.
- **Local history and genealogy room**
- **Literacy volunteers meeting room**
- **Job or homework center**
- **Area for the Friends of the Library**
- **Community information center** with a bulletin board, handouts, announcements, and computer.
- **Collection sorting space** (RFID)
- **Communication center**, a location from which voice, video, data and other technologies can be centralized to provide a master control center. Recommended size of this area or room is at least 8' x 10'. Electrical power supply and ventilation are also important factors as heating loads will vary with the amount of equipment placed in this location.
- **Outdoor Spaces** or extensions to the outside are good opportunities to enhance your indoor space. For example, libraries with limited parking may want to install a drive-through window for returns and pickups of holds. Reading spaces on patios, porches and lawns are a way to welcome the community and provide a social atmosphere. The addition of chairs, tables, and a cafe cart or wi-fi range that extends out to the lawn are examples of inexpensive ways to create an attractive and functional space. Libraries with large lawns can provide community spaces for such things as town celebrations, proclamations, lectures, movies, farmers markets, maker events, art exhibits, and book sales.

See the Library Space Planning Worksheet for formulas on determining meeting room spaces.

Step 8: Flexible-Use Space

Up till now you have been assigning specific library functions to specific library spaces, such as meetings in the meeting room space and books in the book collection space. Flexible use design, however, should allow you to easily convert most spaces from one intended use to another. Design a space with the necessary layout, infrastructure, technology, and furniture to accommodate more than one library activity and you make your space more efficient and more adaptable to changing needs. You also reduce the need for additional square feet or you allow for more square feet to be devoted to the areas that may need growth in the future.

Think about whether you might be able to use movable furniture and other multi-use technologies to make one space you identified above serve more than one purpose. This would allow you to reduce your required square feet. For example, your library might be able to have a meeting room space that doubles as a place for study tables and chairs, more comfortable seating, an area for popular materials browsing, or for art displays.

Step 9: Non-Assignable Space

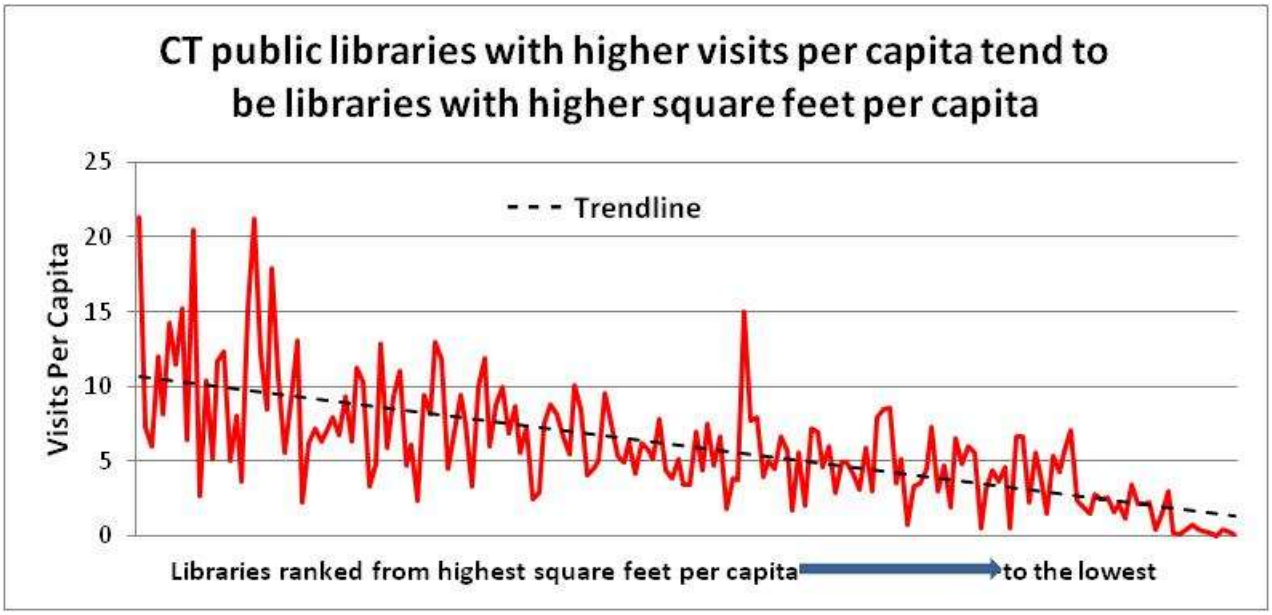
Non-assignable space is that portion of the building that cannot be applied directly toward library service. Some representative types of non-assignable space include: furnace rooms, janitor's closets, storage rooms (including space for staff supplies), vestibules, security systems near entrances and circulation desks, c-car pickup area, corridors, stairwells, elevator shafts, emergency generator space, and restrooms. Such space is necessary to support the operation of the building, but it cannot be used for providing library services.

Non-assignable space generally comprises between 20 and 30% of the overall or gross square feet of the finished building. The requirement of stairs and an elevator means that a multi-story building has more non-assignable space.

If book returns are in a separate room inside a building, they must be one-hour fire rated (two-hour rating is recommended). All book returns should have fire-extinguishing protection or a sprinkler system and smoke detectors tied into the alarm system of the building. Preferably, the alarm system should have off-site monitoring.

Step 10: Putting It All Together

Every new library with a new or expanding building sees a significant up-tick in library visits. And libraries with higher square feet per capita numbers are busier than libraries with lower numbers. Libraries don't get busier when they get smaller, so if you are planning a new or expanded building make sure it has as much space as your community may need for the next 10 to 20 years.



The companion Space Planning Worksheet (Excel file) will assist you in calculating the minimum square feet your library needs to provide the services you have identified. Your total may vary from other public libraries, but under most circumstances your library (including branches) should exceed these minimum benchmarks*. Square feet are measured as gross square feet, which includes non-assignable space.
1.60 Square feet per capita – Library Serving Projected Population under 10,000
1.50 Square feet per capita – Library Serving Projected Population 10,000 to 20,000
1.35 Square feet per capita – Library Serving Projected Population 20,000 to 50,000
1.15 Square feet per capita – Library Serving Projected Population over 50,000
Be aware that these benchmarks are just minimums and your community's need for library space should normally well exceed these totals.

*Based on taking those libraries ranked in the top 40% in visits per capita in each population group served in Connecticut public libraries and using a combination of median and average square feet per capita for those libraries.

Step 11: Location, Site, and Parking

The number one variable influencing whether someone will visit the library is not the size of the book collection, the skills of the staff, or the numbers of internet computers, but the location of the library. If your community has control over where a library will be located, make sure it is in a convenient and busy area of your town or city.

The ideal size of the site includes a structure that is approximately 10% of the site. Parking, driveways, etc., are approximately 30%, and 60% is for landscaping, setbacks, amenities, etc. Very often this ideal site cannot be achieved because of restrictions to the site.

As a check on the site estimate, consider parking as a separate amount. As a rule of thumb, the total number of parking spaces will be one for each staff member plus one-half the number of adult seats in the building. Also verify that this number would provide enough parking spaces to provide for one car space per two seats in the meeting room. Nearby curb parking and/or commercial parking may often be included. Note that local zoning requirements may impose parking requirements. Check with your local zoning enforcement officer to confirm minimum size site, maximum building size, and parking requirements. Some codes require that 300-350 square feet per car be allocated for drives and parking.

The library grounds should be well lighted and clean with a prominent lighted outside sign designating the building or portion of the building as the library. There also should be easy access to a fireproof book return located in a safe, lighted area and available when the library is not open.

Conclusion

Your library's strategic plan will determine the library service needs of your community, and whenever your strategic plan changes, you will need to re-evaluate your space requirements. This space planning guide will assist you in determining the space required to meet your library service needs. If current

library space is deemed insufficient for your community's needs, then it may be time to embark on a building program. Writing a building program is the first step in a project to build a new library building, or renovate your existing building.

Building programs are usually written by a librarian, usually with the assistance of a library building consultant, a building committee, and the input of the general public prior to the architect's design work. The building program includes the results and benefits to be derived from a building project, the general square feet needs for each library service area, relationships of areas to one another, relationships between services and space required, and a list of equipment needed in connection with the project. For example, knowing where discrete sections of the book collection will be housed and how much stack space they require will be determined in the building program.

The building program summarizes space needs and the ways that expanded service areas should interrelate in a new or expanded facility. Few projects are as complex and rewarding as a building program, and few offer such an opportunity to shape the community's library services for years to come. Most building programs will include Library Area Forms (sample in the *Appendix*) for each section of the library, projecting the library's needs in the future. These forms show the activities performed in each area; the number of people who will be in each area at one time and throughout the day; architectural features, including notes about lighting levels, accessibility, and environmental controls; furnishings and equipment; interrelationships among departments; number of books, non-books, seats, etc. An architect will use a building program as a guide when developing plans for a library. The building program becomes a point of common reference between library planners and the architect as they consider specific design options.

Appendix 1: Space Planning Resources, Worksheet, Bibliography

Space Planning Worksheet (Excel)
(http://www.ctstatelibrary.org/sites/default/files/dld/2014_library_space_planning_guide_worksheet.xlsx)
Space Planning Additional Resources and Bibliography -updated - (PDF)
(http://www.ctstatelibrary.org/sites/default/files/dld/space-planning-guide-bibliography-2014.pdf)

Appendix 2: The Library Improvement Planning Process

The library improvement planning process is a highly interactive complex task involving the library governing body, administrative staff, consultant and architect in a wide variety of interdependent activities. Its purpose is to provide a sound basis for improving library services and facilities firmly based on community needs and library capabilities. It serves these varying purposes:

- Identifies overall size and general cost of the project
- Assists staff in determining space needs, capacities and spatial relationships
- Provides an architect with a program for designing the renovation, addition or new building

Provides staff with a document for the review of architectural plans

The Process in Brief includes these steps:

1. Mission, Goals and Objectives. Review and discuss the mission, goals and objectives of the library with the staff and trustees in order to understand the town, library and overall priorities.
2. Community Analysis. Analyze library history and community demographics in order to place the present conditions in an evolutionary perspective and relate project goals to community development.
3. Library Analysis
    a. Conduct focus groups in the community to understand individual perceptions of library services and their related facility requirements.
    b. Interview library and political/economic community leaders to understand the political and economic potential for obtaining resources for library improvement.
    c. Analyze library use and existing physical facilities in relation to the community and to the mission, goals and objectives of the library in order to develop library improvement objectives.
    d. Evaluate an existing facility including ADA deficiencies.
    e. List specific library building improvement objectives.
4. Library Building Program Preparation to End of Project
    a. Meet with a Building Consultant (listing - http://www.ctstatelibrary.org/node/10279) for assistance in planning, space planning, developing library construction projects, and submitting project applications for construction grants.
    b. Work with the staff to prepare a brief outline program delineating major functional areas and capacities needed.
    c. Discuss this preliminary program with the library governing authority and town fiscal representatives.
    d. Consult with members of the community who have different types and levels of disability to see how the library can better meet their needs.
    e. Revise outline program.
    f. Work with the staff to prepare detailed functional area sheets for each library functional area (see *Application for State Public Library Construction Grant*). This will include
        i. Name and square feet
        ii. Activities (What takes place here?)
        iii. Occupants (How many people use this area at one time?)
        iv. Major design features and ambiance of area (acoustical, wiring, environmental, lighting, security systems, and flexibility)
        v. Equipment, furniture, shelving and storage capacity
        vi. Materials (How many books and non-book items will be here at any given time?)
        vii. Area relationships
    g. With extensive staff participation the consultants or library director prepare a preliminary library building program. In addition to written recommendations for facility improvements based on the evaluation above, this work involves interactive sketching of each individual functional area with the appropriate staff members.
    h. Revise functional area sheets based on staff review.
    i. Select and evaluate potential sites.

j. Analyze renovation and addition alternatives with the library director and building committee to determine how the preliminary program could be accomplished. This may be a renovation of the existing facility, an addition or an entirely new building.
k. Modify the preliminary program.
l. Prepare schematic plans for chosen alternative. Estimate costs.
m. Prepare the final library building program.
n. Present the final document to an audience to be determined. (Usually the funding authority)
o. Work with the architect on design development and further refine cost estimates.
p. Work with the architect on construction documents and bidding.
q. Work with the architect and design consultants on and equipment, lighting and graphics.
r. Work with the staff and architectural team on moving and installation.
s. Conduct post-occupancy evaluation after the first year of occupancy to determine the changes necessary to respond to new library uses.

Appendix 3: Library Area Work Form

Designed to help develop a Building Program.

Library Area (Circulation/Fiction/Children's/etc)

Size (square feet) Date

Activities

Occupancy (at one time) Public Staff Daily Uses

Architectural Features - Ambiance

Furnishings and Equipment

Total Seats: Table Carrel Lounge Staff
(How many chairs and what type?)

Proximity (What should this area be near?) Distance (What should not be near?)

Books (How many books will be here at a given time?)(Do not include e-books)

Non-Book Materials (How many non-print materials will be here at a given time?) (Do not include downloadables)